

ABSTRACT

Protocols for designing and implementing sets of simultaneous experiments, in a parallel, multi-variable process optimization reactor, are disclosed. The multi-variable process optimization reactor is preferably a parallel flow reactor having the operational capability to simultaneously vary reaction conditions between reaction vessels – either modularly or independently. The simultaneously varied reaction conditions preferably include at least two of the following, in various combinations and permutations: space velocity, contact time, temperature, pressure and feed composition. Compositional variations in the catalysts residing in each of the reaction vessels can also be investigated in the set of simultaneous experiments implemented in the parallel reactor. Sufficient data is obtained from a single set of simultaneous experiments to generate a master curve.